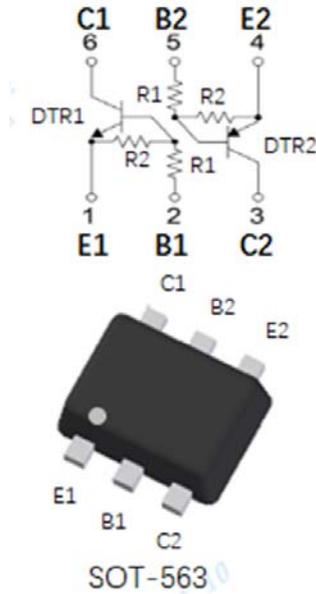


NPN+PNP Digital Transistors (Built-in Resistors)



Features

- Moisture sensitivity level 1
- Halogen free and RoHS compliant
- Surface mount package ideally suited for automatic Insertion

Application

- Signal amplification
- Switching circuit

Mechanical data

- **Package:** SOT-563
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102

■ Maximum Ratings ($T_a=25^\circ\text{C}$ Unless otherwise specified)

DTR1-NPN

Item	Symbol	Unit	Value
Device marking code			D16
Supply voltage	V_{CC}	V	50
Input voltage	V_{IN}	V	-10 to +40
Output current	I_o	mA	100
Power dissipation	P_D	mW	150
Junction temperature	T_J	$^\circ\text{C}$	-55 to +150
Storage temperature	T_{STG}	$^\circ\text{C}$	-55 to +150

DTR2-PNP

	Symbol	Unit	Value
Supply voltage	V_{CC}	V	-50
Input voltage	V_{IN}	V	-40 to +10
Output current	I_o	mA	-100
Power dissipation	P_D	mW	150
Junction temperature	T_J	$^\circ\text{C}$	-55 to +150
Storage temperature	T_{STG}	$^\circ\text{C}$	-55 to +150



■ Electrical Characteristics (T_a=25°C Unless otherwise specified)

DTR1-NPN

Item	Symbol	Unit	Conditions	Min	Typ	Max
Input voltage	V _{I(off)}	V	V _{CC} =5V, I _o =100uA	0.4		
	V _{I(on)}	V	V _o =0.3V, I _o =2mA			2.5
Output voltage	V _{O(on)}	V	I _o / I _i = 10mA/0.5 mA			0.3
Input current	I _i	uA	V _i =5V			360
Output current	I _{O(off)}	uA	V _{CC} =50V, V _i =0			0.1
DC current gain	G _i		V _o =5V, I _o =5mA	56		
Input resistance	R ₁	kΩ		15.4	22	28.6
Resistance ratio	R ₂ /R ₁			1.7	2.1	2.6
Transition frequency	f _T	MHz	V _o =10V, I _o =5mA, f=100MHz		250	

DTR2-PNP

Item	Symbol	Unit	Conditions	Min	Typ	Max
Input voltage	V _{I(off)}	V	V _{CC} =-5V, I _o =-100uA	-0.4		
	V _{I(on)}	V	V _o =-0.3V, I _o =-2mA			-2.5
Output voltage	V _{O(on)}	V	I _o / I _i = -10mA/-0.5 mA			-0.3
Input current	I _i	uA	V _i =-5V			-360
Output current	I _{O(off)}	uA	V _{CC} =-50V, V _i =0			-0.1
DC current gain	G _i		V _o =-5V, I _o =-5mA	56		
Input resistance	R ₁	kΩ		15.4	22	28.6
Resistance ratio	R ₂ /R ₁			1.7	2.1	2.6
Transition frequency	f _T	MHz	V _o =-10V, I _o =-5mA, f=100MHz		250	

■ Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	R _{θJ-A} ⁽¹⁾	°C/W	833
Thermal resistance, junction-to-case	R _{θJ-C} ⁽¹⁾	°C/W	667

Note:

(1) Thermal resistance from junction to ambient and from junction to case mounted on P.C.B. with 25.4mm*25.4mm copper pad areas

■ Ordering Information

Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
EMD16	F2	Approximate 0.0035	3000	30000	120000	7" reel



■ Characteristics

DTR1-NPN

Fig 1: DC Current Gain Characteristics

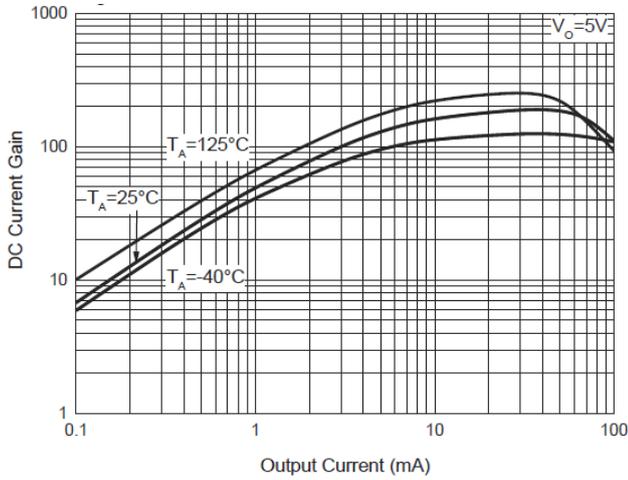


Fig 2: Input Voltage (On) Characteristics

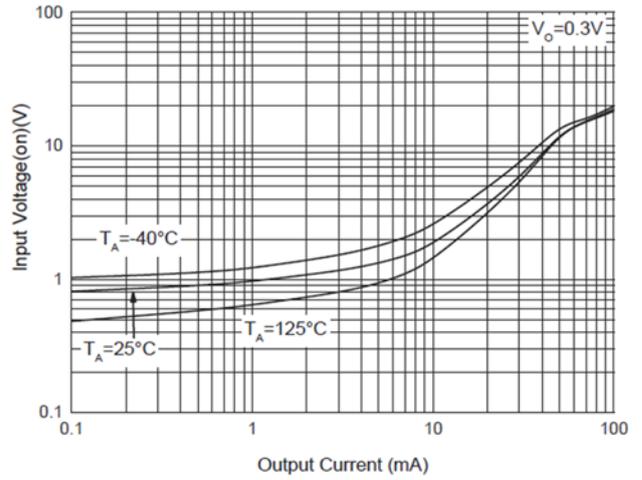


Fig 3: Input Voltage (Off) Characteristics

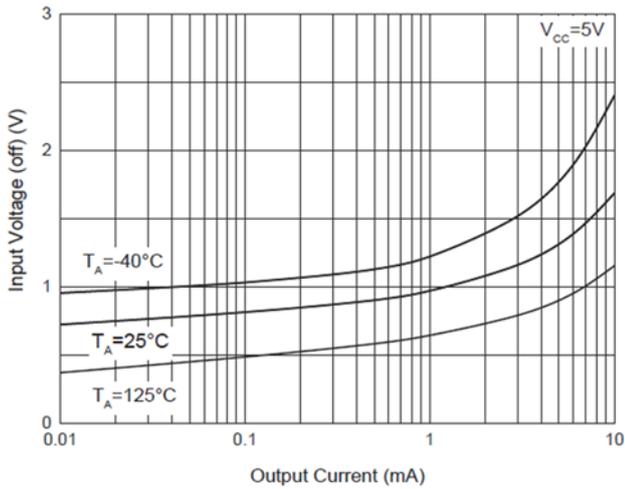


Fig 4: Output Voltage Characteristics

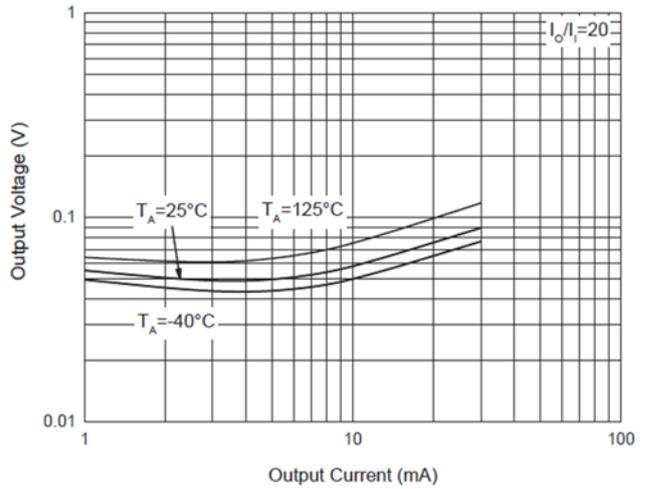
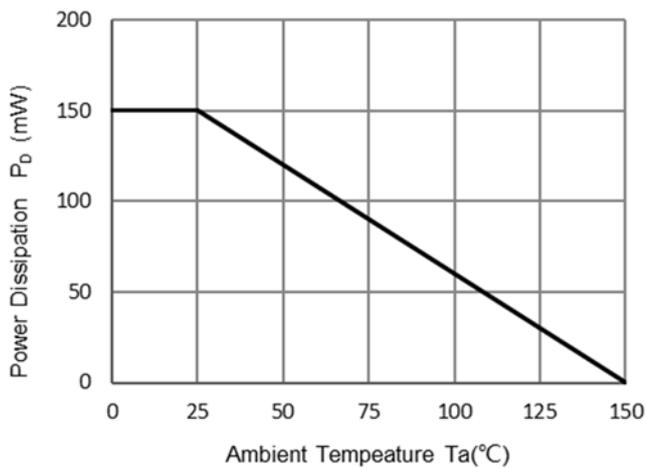


Fig 5: P_D-T_a Curve





DTR2-PNP

Fig 1: DC Current Gain Characteristics

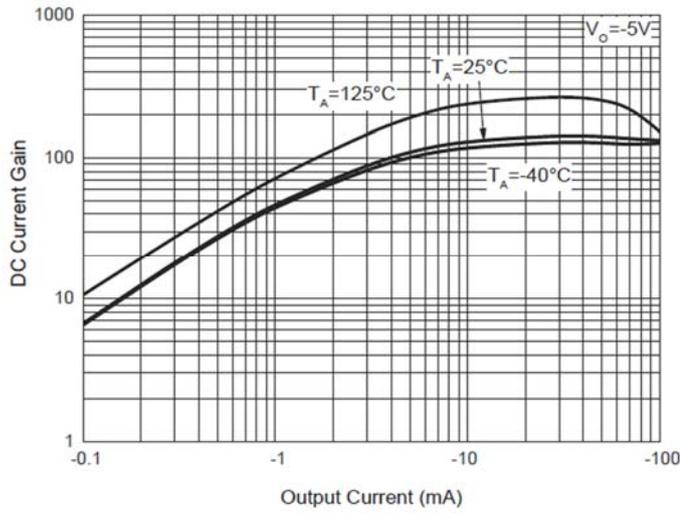


Fig 2: Input Voltage (On) Characteristics

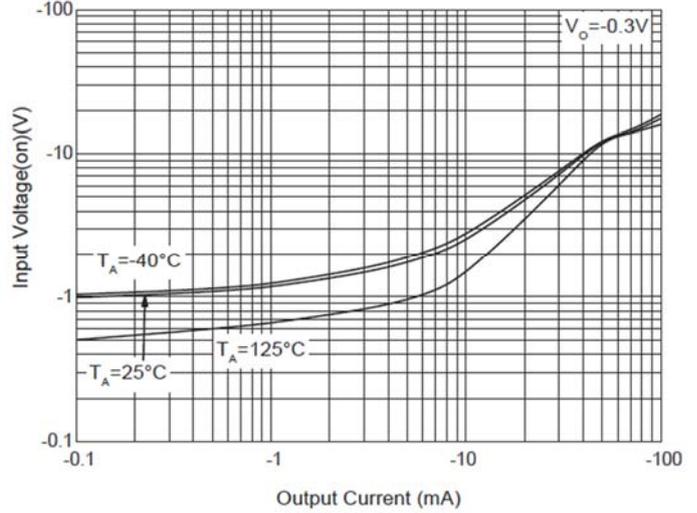


Fig 3: Input Voltage (Off) Characteristics

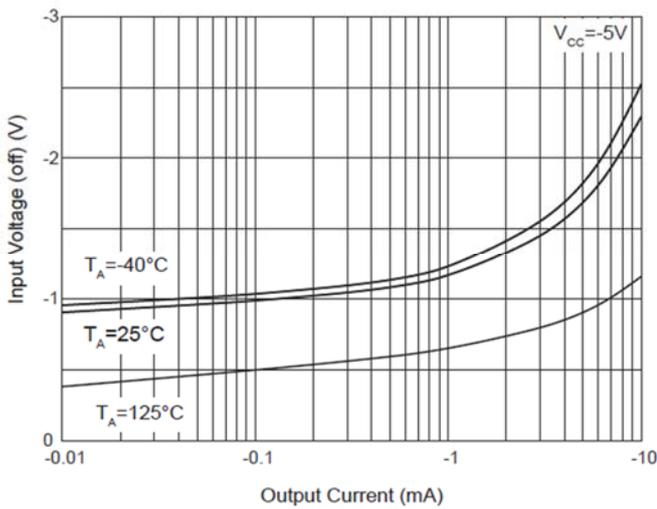


Fig 4: Output Voltage Characteristics

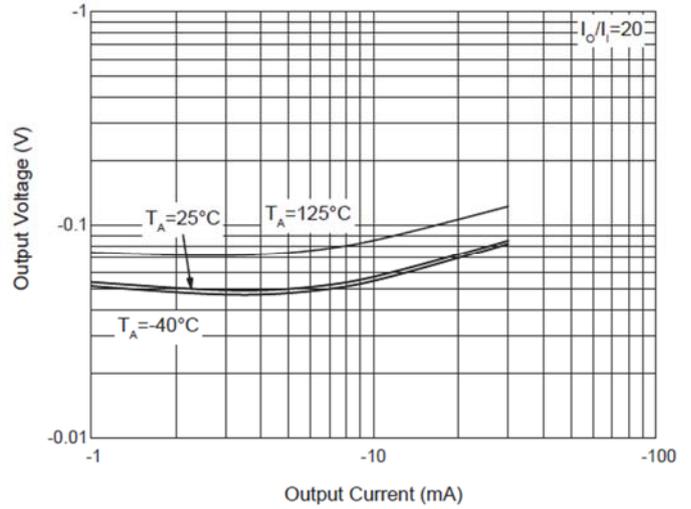
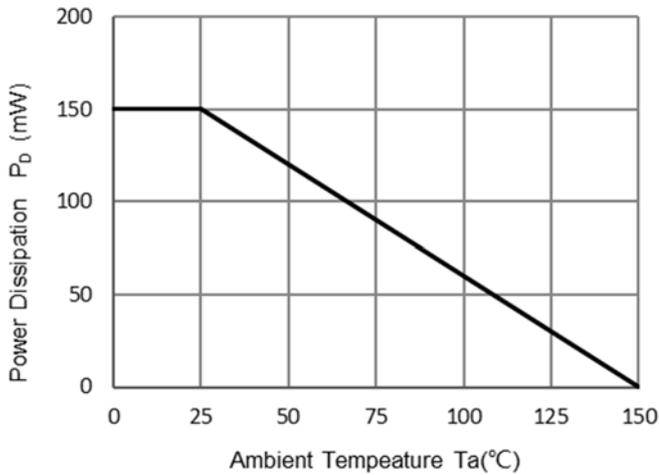


Fig 5: P_D-T_a Curve

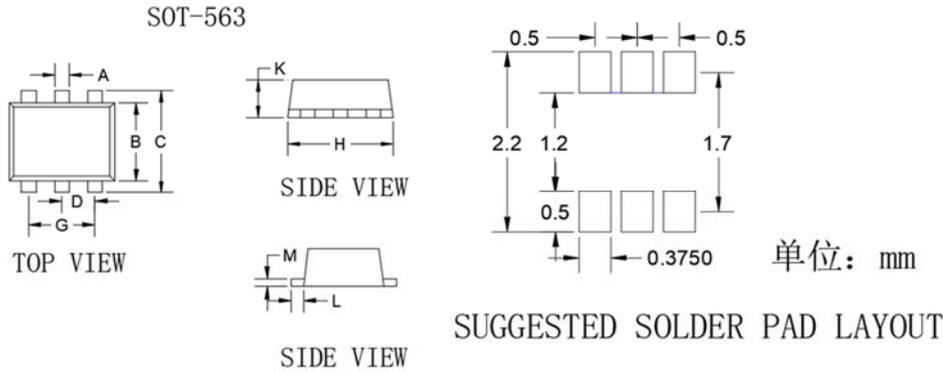




EMD16

RoHS
COMPLIANT

Outline Dimensions



DIM	DIMENSIONS			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.006	0.011	0.150	0.300
B	0.043	0.051	1.100	1.300
C	0.059	0.067	1.500	1.700
D	0.016	0.024	0.400	0.600
G	0.035	0.043	0.900	1.100
H	0.059	0.067	1.500	1.700
K	0.021	0.026	0.550	0.650
L	0.004	0.011	0.100	0.300
M	0.004	0.007	0.100	0.180

Note:

- All dimensions are in millimeters (mm) unless otherwise specified.
[所有尺寸均以毫米为单位, 除非另有说明]
- General tolerances: $\pm 0.10\text{mm}$ unless otherwise specified.
[通用公差为 $\pm 0.10\text{mm}$, 除非另有说明]
- Dimensions and tolerances per ASME Y14.5M-2018.
[尺寸和公差遵循 ASME Y14.5M-2018 标准]
- All dimensions shown are exclusive of burrs and gate residues.
Burrs and gate vestiges shall not exceed 0.15 mm in maximum.
[所有尺寸均不包括毛刺和浇口残留。毛刺与浇口残留的尺寸最大不得超过 0.15mm]
- Dimension b does not include dambar protrusion of max 0.100 mm per side.
[尺寸b不包括单边最大0.100 MM的中筋凸出部分]
- Dimensions B and H are the overall extreme outer dimensions of the mold compound. These dimensions exclude mold flash, lead flash, protrusions and burrs but include the maximum allowable mold mismatch.
[B和H是塑封体的外部极限尺寸, 不包括包封溢料、内引线溢料、凸出部分以及胶体毛刺, 但是包含了包封错位的最大尺寸]
- Formed leads shall be planar with respect to one another within a maximum of 0.076 mm relative to the seating plane.
[成型的管脚应为同一平面, 共面性最大为0.1mm]
- ★It is the key size.
[★ 标记为关键尺寸]



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